

EPA REGION 10 - UNDERGROUND INJECTION CONTROL PROGRAM

Class V Shallow Injection Well Fact Sheet

J. Williams - No. 1

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Subsurface Disposal of Urban Storm Water Run off

Some jurisdictions are considering the construction of injection wells to dispose of storm water in order to avoid general permit requirements under the National Pollutant Discharge Elimination System (NPDES) authorized by the Clean Water Act (CWA). This may at first seem like an easy legal loophole to slip through since the Environmental Protection Agency (EPA) has not asserted that ground waters are waters of the United States subject to protection under the CWA.

However, almost all fresh ground waters within the United States are defined as Underground Sources of Drinking Water (USDWs) by the Underground Injection Control (UIC) regulations. These regulations were promulgated in response to Part C of the Safe Drinking Water Act (SDWA). Regulations to protect USDWs from contamination via injection wells include devices used to emplace storm water into the subsurface.

Regulatory Framework

Storm water disposal wells which inject above or into a USDW are defined as type of Class V injection well. At this time, Class V injection wells are rule authorized; no permits are required for their construction, operation, maintenance, or abandonment.

Rule authorization is conditioned by a stringent performance standard. This non-endangerment performance standard prohibits any injection "...that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation..." Rule authorization thus leaves construction, operation, maintenance and abandonment decision to the injection well owner/operator, but conditions this liberty with the responsibility to project ground water quality. Another condition of rule authorization is timely submission of injection well inventory information to EPA or the state primacy agency.

EPA or the primacy agency may require the owner/operator of any Class V injection well to obtain an area or individual permit. This allows more intensive regulation of rule authorized injection wells if needed in certain areas or under particular conditions. In order to obtain a permit to construct and operate a storm water injection well, an applicant might have to demonstrate that the injected fluid will meet drinking water standards either at the point of injection or by the time the injected fluid reaches the water table.

Additional State Requirements

Many states have additional requirements under their delegated UIC programs or some other state authority to protect ground water quality. For example, injection of storm water in Oregon and Washington would have to be conducted in a manner which would meet state ground water quality standards which are more stringent than drinking water standards. In Idaho, any injection well deeper than 18 feet needs to obtain a permit from the state Department of Water Resources.

Some Practical Consideration

Typical urban storm water run off does not generally meet drinking water standards. Therefore, direct injection into aquifers is clearly a poor practice. Injection of typical urban storm water some distance above the water table may allow for adequate contaminate attenuation under favorable geologic conditions. Such conditions would include several feet of clay-rich sediment to retard infiltration and adsorb heavy metals.

All storm water injection wells are subject to abuse and accidents. Illicit disposal or accidental spills of hazardous material may go unnoticed until contaminants reach a spring, seep, or water supply well. At that point, the financial cost associated with public health protection and natural resource clean-up costs may be extremely high. Even known spills of hazardous materials may be expensive to deal with once they reached the bottom of an injection well and are headed toward the water table. Environmental liability concerns need to be discussed openly with insurance companies and the citizens who ultimately pay the jurisdiction's liability insurance premiums.

The hydrologic changes and corresponding problems caused by urbanization can be extremely difficult to handle. In response, a number of storm water management design manuals have been developed over the past several years which attempt to replicate natural ground water recharge. These design manuals for urbanizing and already built-up areas have changed significantly over the past several years. And more changes are likely as operational information about newer design alternatives becomes available. But the conceptual premise behind the different methods is to replicate natural infiltration and percolation. Injection wells short-circuit the infiltration and percolation process in a manner which often threatens ground water quality. Therefore, the best storm water management plans tend to avoid the use of injection wells.

For more information regarding the UIC Program and Subsurface Disposal of Urban Storm Water Run off, please contact:

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